The Ten Most Frequently-Asked Technical Questions of All Time

Some questions never go away. This issue of Training Tech Topics puts them all in one place. The majority of them have, at one time or another, appeared on these pages. Others have been called in and answered on the phone.

At any rate, here they are. We hope they'll help you get the most from your Allen equipment. By the way, if we've overlooked an important question or problem you've frequently encountered, drop us a line!

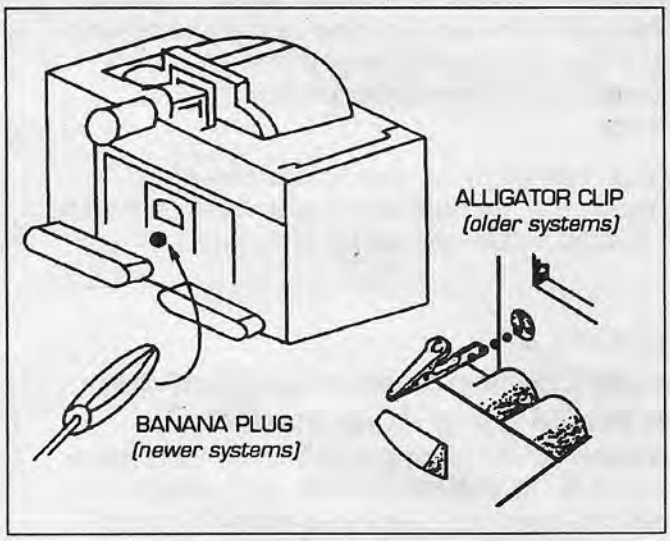


Figure 1

Question 1

How can I hook up the green lead to vehicles equipped with the Renix ignition system?

This is, by far, the most frequently-asked hookup question ever. The Renix system has been used on many AMC, Jeep and Renault vehicles. The coil primary connection is actually recessed into the front side of the ignition module.

For early models ('88 and older), insert the alligator clip from the volt/ohm probe in the hole as shown—it snugly slips over the pin on the coil. For newer versions of the system ('89 and newer): Insert a 1/8 inch "banana" plug into the opening. See *Figure 1.*

After inserting the appropriate type of clip, clamp the analyzer's green lead to the clip.

If you see a lot of these vehicles, we recommend you build an adapter using locally acquired parts.

Question 2

Sometimes, when hooking up my GM DIS lead set to a 3.8L turbo, 3.8L or 3800 engine, the car won't start. Why not?

The 3.8L turbo and 3.8L DIS engines require the "A" and "B" adapter harnesses respectively. The 3800 engine, however, does not require either of these harnesses.

If you use the wrong adapter for the wrong engine (or an adapter when it's not required), the engine will NOT start. Use the following chart for quick reference.

APPLICATION	HARNESS ADAPTER	ENGINE LEAD	COBRA HEAD ADAPTER
1984 & '85 Turbo 3.8L	P/N 43662 ("A")	P/N 44031	P/N 44032
1985 & newer 3.0L 1986 & newer 3.8L/3.8L Turbo 1989 & newer 3300	P/N 43663 ("B")	P/N 44031	P/N 44032
1988 & newer 3800	NONE	P/N 44429	P/N 44425

Question 3

Can I test 12-Cylinder engines with the SEA?

Yes and no. The SEA is designed to test a maximum of 8 cylinders—but someone forgot to tell the dual trace oscilloscope because it doesn't care. Make your normal engine harness connections and the scope will display all 12 cylinders.

Although you won't be able to perform an automatic test, manual test scope display will work fine. (Digital values will *not* be accurate.)

Question 4

Why am I getting strange Full Chart data from this '88 GM W-Body model?

Per a series of GM service bulletins, the fuel system on most 2.8L '88 W-Body, A-Body and L-Body models has been modified to use speed/density calibration rather than mass airflow. The service procedure involves replacing the MEMCAL chip in the ECM, but one important step is often overlooked—disconnecting the MAF sensor relay.

The modified MEMCAL chip (PROM #'s 1621, 1641, 0421, 0431, 0441 or 0451) does not use MAF input. If the MAF relay is left connected, it confuses the heck out of the ECM, causing driveability problems and strange Full Chart readings.

Why not just disconnect the MAF sensor? Because the ECM still relies upon manifold air temperature (MAT) input—and the MAT sensor is inside the MAF sensor!

The bad Full Chart data could simply be caused by a data-entry error. On newer versions of **SEA** software (Version 9 and later), the following prompt appears when you identify a vehicle as an '88 VIN W model: "Has this vehicle been equipped with an updated fuel control system (MAF relay disabled)?" If you select the wrong option, Full Chart data won't be displayed properly.

Note: If you don't see this prompt, you have an older version of software. Try re-entering the vehicle as an **'89** VIN W. (The modified MEMCAL makes the ECM think it's installed in an '89 model.)

However, if the vehicle exhibits a driveability problem as well, chances are the MAF relay is still connected. Refer to the following procedure to confirm and, if necessary, disconnect the relay.

Procedure

1. Disconnect the MAF sensor electrical connector.
2. Check the voltage at center pin C—if it measures 12 volts, the MAF relay is still connected. Proceed to step 3.
3. Disconnect the battery negative terminal.
4. Locate and disconnect the Mass Airflow sensor relay—tape over the harness connector.
5. Reconnect the MAF electrical connector. (Remember, the ECM still needs two of the five wires for MAT input.)
6. Clean sludge buildup from the back of the throttle body and the edge of the throttle plate. This is done most effectively with the throttle body removed from the intake manifold. Inspect the throttle plate carefully to make sure it closes completely.
7. Restore battery power.
8. Hook up your analyzer to the ALDL connector, and enter the GM on-board diagnostics test mode.
9. During the data entry sequence, select "yes'' when asked when asked, "has this vehicle been equipped with an updated fuel control system (MAF Relay Disabled)?"
   Note: *If you don't see this prompt, you have an older version of software. Re-enter the vehicle as an '89 VIN W.*
10. Display "Full Chart Data."
11. Turn off all accessories, start the engine and allow it to warm up to 90°C. It must enter "Closed Loop."
12. Read the Idle Air Control (IAC) reading on the Full Chart screen. It *MUST BE* 10-15 COUNTS. If the reading is not 10-15, use the minimum air adjustment screw until it is.
    Note: *The IAC reacts slowly. Make the adjustment gradually and wait about 30 seconds for the reading to "catch up" with your change.*
13. Turn engine off and then back on.
14. Adjust the throttle position sensor to .62-.72 volts using a DVOM (do not use the data stream information for this).
15. Disconnect the battery again, then reconnect.
16. Let the engine idle for 10 minutes in "DRIVE" ("NEUTRAL" for manual transmission models).

The car may run poorly for the first 10 minutes. It takes about an hour of driving for the ECM to completely "learn" how to run well.

Question 5

During a Ford OBC test, the analyzer prompts me to turn the engine "OFF." I follow the directions on the screen but the analyzer won't let me continue. Why not?

Ford OBC tests look for manifold vacuum to determine whether the engine is running. If you're connected to a vacuum line routed to a vacuum reservoir, the analyzer senses the vacuum and thinks the vehicle is still running.

Make sure you're connected to true manifold vacuum.

Question 6

I can't find the ignition coil on some of the Japanese imports that roll into my shop—how do I hook up the Green Lead on these cars and trucks?

The coil is probably inside the distributor cap. To kill the ignition for cranking and power balance, or to perform primary analysis, refer to the following procedure.

Procedure

1. Remove the distributor cap, rotor and plastic shield. *Lift the cap straight off, otherwise you can break the carbon electrode inside the cap.*
2. Attach a small diameter jumper wire to the coil negative wire.
3. Lay the jumper wire on the rubber grommet (where the distributor wires exit). Leave a small portion of the jumper wire exposed so it pokes out from under the cap when the cap is reinstalled. See *Figure 2.*
4. Reinstall the shield, rotor and cap.
5. Connect the Green (Primary) Lead to the exposed jumper wire.
6. Proceed with testing.

DON'T FORGET TO REMOVE THE WIRE AFTER TESTING THE VEHICLE!

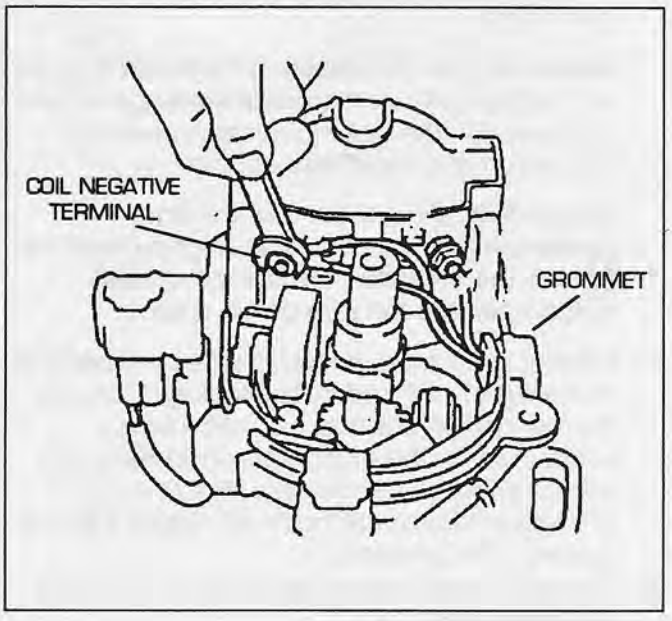


Figure 2

Question 7

I own an Allen Emissions Analyzer—how do I get tach from some of the new rotary/distributorless ignition vehicles?

For most vehicles, tach hookup simply involves clamping the RPM pickup around a spark plug wire; however, some models—rotary and distributorless ignition applications in particular—require special hookup procedures.

- **'92 and older GM Quad 4**: For the most convenient hookup, use the Bar 90 Auxiliary Tach Lead (or BAR 84 32-480 adapter). "Stab" the tach reference connector with the red probe. (This connector is located in the ignition module wiring harness, close to the module and may be wrapped up in electrical tape. It's usually attached to a white wire with black trace or, in some cases, a solid white wire.) Connect the black alligator clip to a good engine ground. If you have a BAR 90 Analyzer, see the RPM Hookup help screen for an illustration of the hookup.
- **'93 GM Quad 4**: General Motors has eliminated the tach connector on '93 models. Do not use the auxiliary tach lead. Instead, clamp the sync probe around the ignition module primary feed wire (pink with black trace). This wire is part of the Integrated Direct Ignition (IDI) module connector, which plugs into the left (driver-side) of the coil cover assembly. See *Figure 3.*

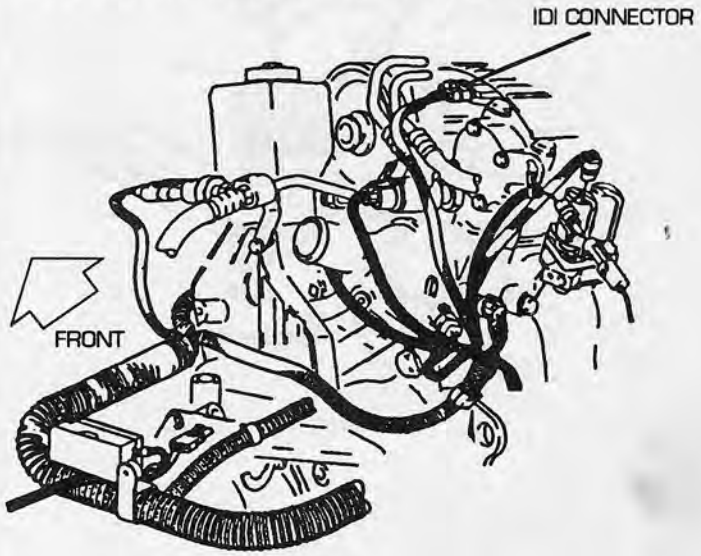


Figure 3

- **Mazda RX7**: Connect the RPM pickup to one of the two **trailing coil** wires. (The trailing coil is located on the driver-side of engine compartment, between the firewall and shock tower.) Enter the RX7 as a "ROTARY OR TWO CYCLE" application on the Ignition Type screen.

- **Nissan Pulsar & 300ZX with DIS**: There are no spark plug wires to clamp around; however, most models provide a thin loop of wire for inductive tach pickup. On the **Pulsar**, the loop is usually located near the power transistor on the driver-side of the engine. On **300ZX** models, you'll find the loop near the upper radiator hose. Clamp the RPM Pickup around the inductive loop. If you can't find an inductive loop, Nissan recommends removing the valve cover and #1 coil, then installing a high-tension wire between the coil and spark plug. Clamp the RPM Pickup around the wire.

  WARNING: *To avoid electrical shock, do not attempt to install or remove the spark plug wire when the engine is running.*

- **Lexus**: Remove the center covers to locate the spark plug wires.

- **Infiniti Q-45**: Q-45 models also have a wire loop for inductive tach pickup. It's located directly below the left (driver-side) ignition module.

  The loop is actually part of a large grey plastic connector, which may be wedged into a metal clip under the transistor.

  Pull the connector out from underneath the module and clamp the sync probe around the wire as shown in *Figure 4*.

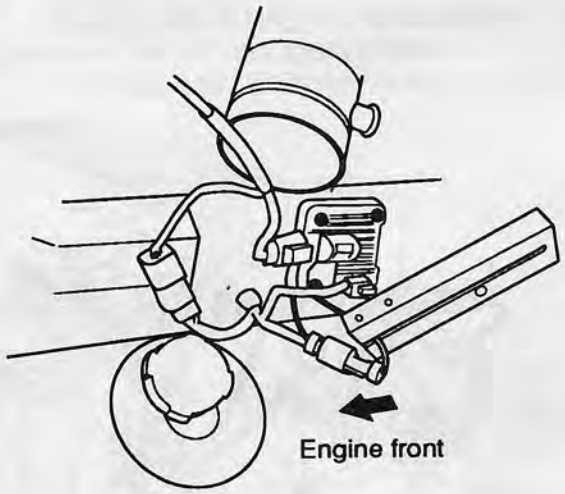


Figure 4

- **Acura Legend Coupe & NSX**: Clamp the sync probe around the "service loop." The service loop is a thin wire that comes out of the 8-pin igniter unit (ignition module) connector. Refer to *Figure 5*.

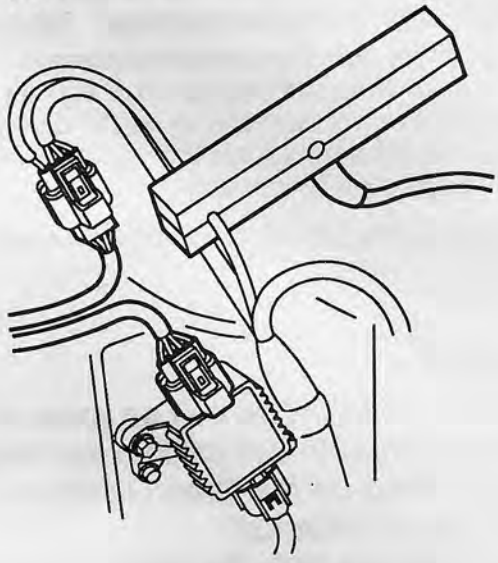


Figure 5

  On Legend Coupe models, the service loop and igniter unit are underhood, mounted on the passenger-side fenderwell. On NSX models, they're located in the rear of the vehicle on top of the transmission.

- **Subaru SVX & Nissan Maxima SE**: 1992 and newer 3.3L Subaru and 3.0L Nissan Maxima SE models do not have any spark plug wires or inductive tach loops. The coils are connected directly to the spark plugs. To get synch from these vehicles, follow this procedure:

1. Turn the engine OFF.
2. Use a 10mm socket wrench to remove the #1 ignition coil.

   Nissan Maxima SE models: #1 cylinder is at the rear passenger-side corner of the engine (near the firewall). The coil mounting screws are visible from the top of the engine.

   Subaru SVX: #1 cylinder is at the front passenger-side corner of the engine (near the front of the vehicle). The coil is mounted horizontally into the side of the engine.

3. Install a spark plug extension wire between the removed #1 coil and #1 spark plug. Carefully lay the ignition coil and extension wire somewhere in the engine compartment so it will not interfere with testing. *Figure 6* shows the Nissan Maxima SE hook-up; *Figure 7* shows Subaru SVX connections.
4. Clamp the sync probe around the spark plug extension wire.

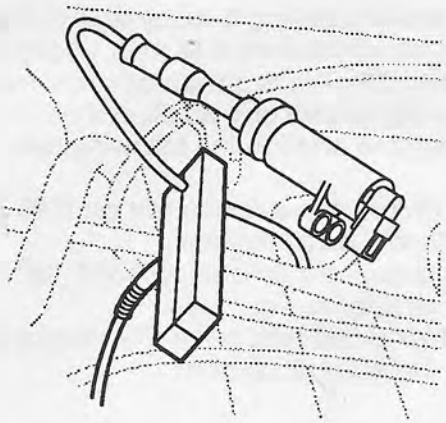


Figure 6

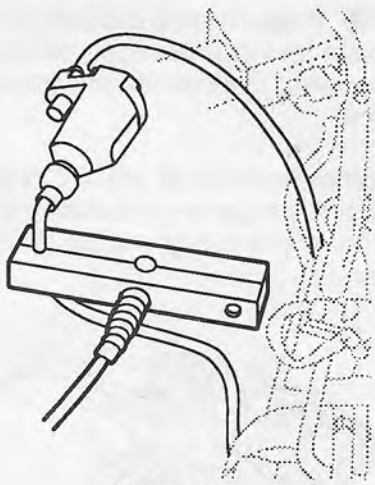
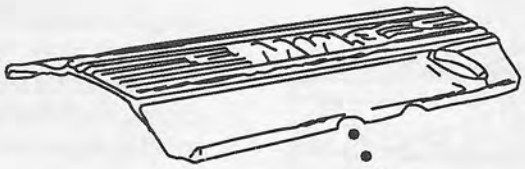
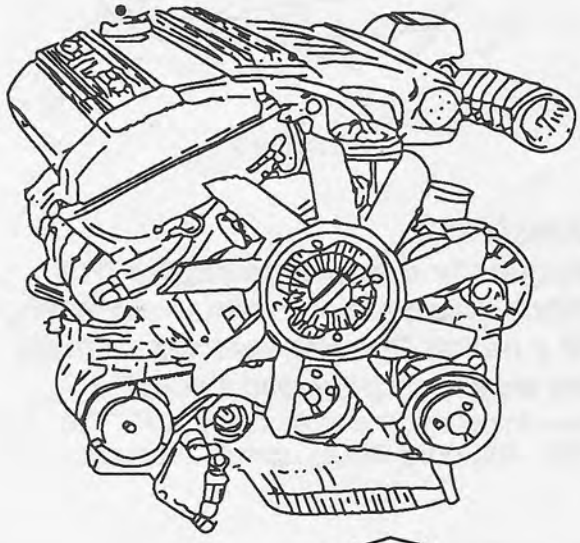


Figure 7





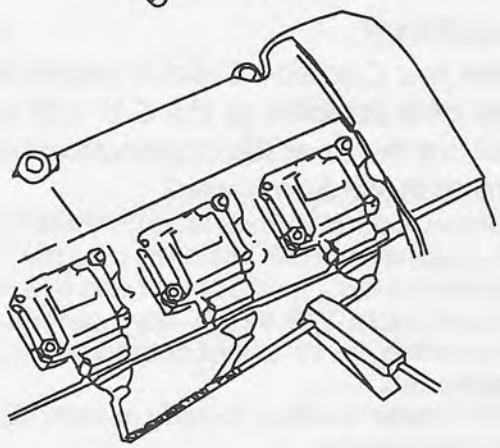


Figure 8

- **BMW 525a & 525i**: Remove the coil shield from the top of the engine. (The coil shield is the larger of the two removable plastic covers, located on the passenger side of the engine.)

Follow this procedure and refer to *Figure 8*.

1. Use a flat-blade screwdriver to pry off the two cosmetic caps on the shield.
2. Use a 10mm socket to remove the bolts under the caps.
3. Unscrew and remove the oil filler cap.
4. Remove the coil shield from the engine.
5. **Important**: Reinstall the oil filler cap before starting the engine!

Once you've removed the coil shield, clamp the RPM pickup around one of the individual coil-feed wires. (It doesn't matter which one).

You should identify this model as NISSAN DIS on the **ETA**'s Ignition System selection screen.

- **Saab 9000**: These models provide an orange-colored wire for inductive tach pickup, near the large "four wire" connector underhood, close to the firewall.

This wire comes from pin 38 of the Control Unit. Clamp the sync probe around this wire as shown. *Figure 9* comes right out of a Saab 9000 service training manual.

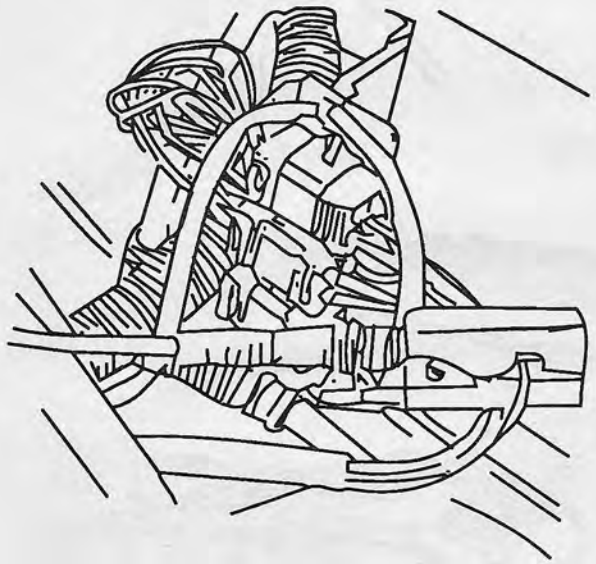


Figure 9

Question 8

I frequently see strange engine (Full Chart) data on the screen when testing '89 & newer Chrysler vehicles. Is there any way to display good data?

Yes—simply turn the ignition key "OFF," then back "ON." The data should update properly.

Question 9

I have two Cadillac C-Body leads—one of these also doubles as the GM ABS lead. What are the specific applications for each of these harnesses?

The older Cadillac C-Body lead (P/N 44677) is a short adapter harness. Install this adapter between the OBC interface box and GM ALDL Interface Cable (P/N 44022). It's required when you're testing the on-board computer system on these models:

- **1989 & older Cadillac C-body models** (DeVille and Fleetwood)
- **Carbureted Chevy Spectrum models** (These models also require the GEO Storm/Spectrum Adapter, P/N 45731.)

The newer Cadillac C-body lead (P/N 46041) looks exactly like the GM ALDL Interface Cable (P/N 44022). This is a standalone harness that does not require any additional adapters. It's required to perform the following tests:

- Any on-board computer test on **1990 & newer Cadillac C-Body models**.
- Supplemental inflatable restraint (SIR) tests on all GM vehicles so-equipped.
- Antilock brake tests on all GM models equipped with the Bosch 2U system.

Question 10

How do I find the T1, E1 and W terminals when I'm connecting the Multi-purpose Engine Lead to a Toyota vehicle?

Unfortunately, Toyota vehicles don't have a conveniently located diagnostic connector. The location of these terminals varies from model to model; however, when the analyzer prompts you to connect the lead, a help bullseye appears at the bottom of the screen. Select this bullseye for detailed hookup instructions.